



Missouri Department of Natural Resources
Division of Energy

Integrated Strategic Plan



August 1999

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Background

Each year, Missourians consume nearly 1,800 trillion British Thermal Units (BTUs) of energy. If all forms of energy used — electricity, natural gas, gasoline and diesel fuel, and wood or other fuels — were converted into petroleum, the 1,800 trillion BTUs would equal 225 million barrels of oil. That means each Missouri resident uses an average equivalent of 42 barrels, or 1,800 gallons, per capita of petroleum annually.

For the privilege of consuming energy from fossil fuels, Missourians pay more than \$10 billion each year. This does not include costs related to pollution associated with energy production, transportation and use. Missouri citizens spend nearly 11 percent of their total income on energy. Most of this money leaves Missouri because 88 percent of the energy we consume comes from outside the state or from nations with which we have minimal economic exchange. In addition to establishing these data, the 1992 Missouri Statewide Energy Study also recognized that, in addition to our economic well-being, energy use is increasingly recognized as a major influence on the health of our environment.

The Missouri Statewide Energy Study found that energy expenditures are significant enough within the economy that enhanced energy efficiency may be expected to produce a beneficial result. The \$10 billion of annual energy expenditures support 98,000 jobs and \$2.6 billion in personal income in Missouri. This reflects jobs directly in the energy industry and the indirect benefits of the ripple effect of this primary economic stimulus. Thus, even relatively modest improvements in energy efficiency can have a dramatic effect on expenditure patterns in the state. If current Missouri energy expenditures were reduced, billions of dollars could be added to consumer and business purchasing power.

Fossil fuels comprise more than 90 percent of all the fuel types used in Missouri. Use of energy improves the quality of our lives, but fossil fuels also create many health- and environment-related problems. Energy production and use account for more than 75 percent of air pollution. Electric power plants were the state's leading source of carbon emissions from primary consumption of fossil fuels in 1990. As Missourians use energy, we emit 133 million tons of carbon dioxide into the air – substantially more per capita than other industrialized nations.

The United States now imports 50 percent of its oil, more than before the first oil embargo in 1973, when imports accounted for 34 percent of consumption. Current low energy prices stem in part from the policies and technologies that improved energy efficiency in the decade following the 1973 oil embargo.

Approximately eight percent of the national energy supply and only two percent of the Missouri energy supply come from renewable sources. Large hydropower, with associated environmental problems, comprises 54 percent and 37 percent of the national and Missouri renewables total respectively. Other renewable energy resources include solar, wind, and biomass resources such

as crop wastes. In addition to renewable fuels, Missouri should explore the use of alternative transportation fuels that burn cleaner, some of which can be produced here at home.

Increased availability and use of many of these renewable and alternative energy sources can increase Missouri's energy independence, keep more energy dollars at home and help Missourians make environmentally sound energy choices.

Development of this strategic plan included a survey of and focus group meetings with many organizations, individuals and companies involved in various aspects of energy. The purpose of these contacts was to seek the energy priorities of parties external to the Department of Natural Resources' Division of Energy. These Missourians reaffirmed the conclusions in the 1997 final report of the Governor's Energy Futures Coalition that the state has several priority roles regarding energy: to inform the public about energy-efficiency choices and environmental protection, promote alternative-energy sources, and encourage energy conservation and efficiency. The Division of Energy's strategic issues focus on these needs.

The strategic plan and the services offered by the Division of Energy are based on these fundamental principles:

- Energy, the environment, and the economy are inextricably linked,
- Energy efficiency and increased use of alternative energy benefit the Missouri economy by keeping energy dollars closer to home and giving us diverse energy choices that strengthen our energy independence,
- Energy efficiency and increased use of alternative energy benefit the Missouri environment by reducing air, water and soil pollutants, and
- Realization of the goals in this plan can be accomplished only through information, partnerships and commitment among varied and diverse citizenry and interests.

Vision

The Division of Energy envisions a Missouri where all enjoy economic prosperity and a quality environment through the use of safe, reliable and efficient energy resources and technologies.

Mission

The Mission of the Division of Energy is to help Missourians use and produce energy wisely and efficiently to protect the environment and foster economic prosperity.

Values of the Division of Energy

honesty and integrity
respect
trust
quality service
professionalism

fairness
collaboration
dedication
credibility
reliability

competence
effective communication
accountability

Issue 1: Energy Supply

Under prevailing trends, consumption of fossil fuels will continue to escalate, further contributing to environmental degradation and loss of economic opportunity. If fossil fuels are depleted with no alternative infrastructure in place to supplement vital energy resources, the declining availability of traditional energy sources can be expected to drive prices up.

The emergence of more alternative energy infrastructures will be needed to assure the availability of reliable and affordable energy resources. In addition, alternative energy sources will minimize environmental degradation and stimulate emerging global markets.

These energy choices include alternative and renewable energy sources, which will play increasing roles in providing energy for Missouri's future and for the state's energy security. The Division of Energy advocates energy choices that strengthen the economy and reduce environmental effects.

In order to make informed decisions, Missourians need reliable information about their energy resources because energy impacts virtually every aspect of their lives. As we enter the new millennium, Missourians will need more information about the kinds and sources of energy that can enhance their lives and communities and increase personal freedom.

An understanding of viable alternative energy supplies, the environmental and economic impact of energy, and access to timely and reliable information will give Missourians the opportunity to make judicious energy choices. Ignoring the need to create this understanding will reduce the opportunity to improve our communities, economy and environment. Therefore, we must focus on activities that strengthen, and enhance public understanding about, environmentally safe and diverse energy resources.

Goal. Strengthen environmentally sound and diverse energy supplies

- **Outcome A. Diverse energy supplies that reduce adverse effects of energy production, distribution and use on Missouri's environment and economy.**

Measure: Statewide and area-specific emissions of pollutants; percent of energy produced and consumed by type (fossil, alternative); energy source (in or outside of Missouri, green or not).

Objective a. By 2003, increase by 20 percent the use of renewable- and alternative-energy resources in Missouri homes, businesses, industries, utilities and transportation.

Measures: Shipments to Missouri of products used in production of renewable energy, assuming equipment to Missouri is a proxy for installation in

Missouri; amount of alternative fuels used in businesses, industries utilities and transportation.

Strategies

1. Establish partnerships with varied state, school, urban, university, and private-sector organizations and entities as appropriate to accomplish these strategies.
2. Examine viable uses of renewable-energy sources in Missouri. Identify limited number on which to focus – schools, parks, agriculture, state buildings, telecommunications, new homes, highway/railroad signage are potential focal areas – and conduct all phases from market research to technology transfer.
3. Gather data on renewable energy resources available in Missouri such as solar insolation, wind potential, and biomass availability.
4. Establish baseline data for renewable and alternative energy use.
5. Develop better method to track use of alternative fuels and development of infrastructure, including establishment of a voluntary data reporting system.
6. Determine appropriate uses for new technologies, such as fuel cells, and pursue installation at appropriate sites, especially industries, state buildings and schools.
7. Advocate the offering of green power and development of Missouri-based green power resources through direct contact with utilities, Public Service Commission proceedings, electric utility restructuring, policy discussions and meetings with potential heat and power generators in the business and industrial sectors.
8. Seek legislation to establish a low-interest loan fund, tax credits or other incentives to attract manufacturers of cleaner technologies, such as fuel cells, photovoltaic modules or wind turbines, and stimulate use of alternative-energy sources.
9. Expand existing loan fund to help finance installation of renewable-energy equipment in schools, hospitals, local government buildings, and private-sector facilities.

Objective b. Develop and advocate environmentally sound energy policies.

Measures: Successful inclusion of environmentally sound energy policies in legislation, community codes, and Public Service Commission rulings, for example.

Strategies

1. Develop state energy policies on varied energy subjects and issues to inform decision-makers and the public.
2. Advocate inclusion of efficiency, renewables, low-income weatherization and customer disclosure in the electric utility restructuring debate.
3. Advocate energy efficiency, renewable-energy sources and development of Missouri-based green-power resources through direct contact with utilities, Public Service Commission proceedings, and electric utility restructuring.
4. Advocate tax credits to stimulate installation and use of alternative-energy sources.
5. Advocate inclusion of renewables and efficiency programs in utility rate filings.
6. Analyze policy options and collect data regarding greenhouse-gas emissions and other energy-related air emissions.
7. Prepare state energy emergency plans.

Objective c. Increase transportation alternative fuel use and fuel efficiency in public and private fleets as follows:

By July 2000, increase annual purchases of alternative-fuel vehicles to 50 percent of all new state vehicles,

By July 2002, increase to 30 percent the alternative-fueled vehicles in the state fleet actually using alternative fuels,

By July 2001, approve first \$50,000 in loans to local governments for alternative fuel vehicles or fueling stations,

By December 2003, increase purchases of vehicles capable of using alternative fuels in Missouri's Clean Cities fleets by 10 percent.

Measures: Record of alternative-fuel vehicle and fuel purchases by state agencies, local governments, and participants in urban Clean Cities programs.

Strategies

1. Increase state purchase and use of alternative-fuel vehicles and fuel by providing information and training to state agencies.
2. Increase use of alternative-fuel vehicles and fuel in private and public fleets by partnering with St. Louis and Kansas City Clean Cities campaigns, business groups such as the Chamber of Commerce, Missouri auto manufacturers, and fuel-focused organizations such as the Natural Gas Vehicle Association to actively promote alternative-fuel vehicles for public and private fleets.
3. Develop rules, initiate and promote newly enacted loan fund for local government purchases of alternative-fuel vehicles and construction of fueling stations.

- **Outcome B. Understanding of energy-supply issues**

Measure: Results of public, constituent-group surveys, focus groups, interval panels.

Objective a. Increase public understanding of energy choices that affect the environment and economy by 5 percent by 2003.

Measures: results of citizen and business surveys, focus groups and interval panels.

Strategies

1. Establish baseline of understanding of energy issues through regular surveys of citizens and business, and establishment of focus groups or interval panels.
2. Maintain reliable record of all fuel sources used by Missourians.
3. Regularly monitor and publish fuel prices.
4. Release energy-indicators report every two years, beginning in 2001.
5. Provide consistent and accurate information about how Missourians use energy, energy sources used, costs and environmental impacts through publications, public presentations, website, news stories, public events, other venues and cooperation with other organizations.

6. Provide information about Missouri-specific uses of renewable- and alternative-energy sources and associated costs, environmental benefits, and payback rates through publications, public presentations, website, news stories, public events and other venues.

Issue 2: Energy Efficiency

Energy use plays an integral role in Missouri's ability to improve economic prosperity and greatly influences the quality of the environment. Using energy more efficiently helps the economy grow and makes our air and water cleaner.

Energy efficiency can compete in the marketplace. Energy-efficiency improvements in homes, commercial buildings, transportation and industry contribute greatly to offsetting increased energy demand while freeing up capital for use elsewhere. Benefits include avoiding costly capital investments in generating capacity, lessening reliance on imported energy supplies and reducing harmful emissions. Saving energy through efficiency costs much less than investment in new generating capacity, and gains in energy efficiency keep money in the local economy.

Energy efficiency helps stem contamination of land and water resources that result from the production, transportation and use of energy, and it helps lower emissions of carbon dioxide and other greenhouse gases that contribute to warming of the earth. Energy efficiency also can help avoid the vulnerability of our economy to energy supply disruptions.

Managing energy more efficiently is not simply a way to enjoy lower utility bills. It represents an opportunity to bolster local economies through cost-effective investments that also lower environmental impacts on land, air and water resources. Greater choice, in a market that values environmentally benign and cost-effective technologies, encourages competition and the establishment of a range of energy resources tailored to meet the needs of Missouri consumers.

Goal: Advocate decisions that benefit Missouri by advancing energy efficiency

- **Outcome A. Energy-efficient state buildings**

Measures: Trends in implementation of efficiency initiatives in state facilities, such as number of buildings retrofitted with energy-efficient improvements or designed with energy-efficient techniques; BTUs of energy saved; dollar value of reduced utility bills.

Objective a. Increase energy efficiency in state buildings and operations as follows:

By July 2000 and each year thereafter, identify 20 percent potential energy cost savings (approximately \$240,000),

By July 2001, establish schedule and funding to perform energy audits of 1.2 million square feet of state buildings each year,

By July 2001, establish incentives and funding mechanism to implement the projects and savings identified in energy audits,

By 2002, complete the design of at least two new state buildings expected to save 50 percent on energy bills,

By 2002, make energy-efficient equipment widely available and the preferred choice for state purchases.

Measures: Trends in implementation of efficiency initiatives in state facilities, such as number of buildings retrofitted with energy-efficient improvements or designed with energy efficient techniques; BTUs of energy saved; dollar value of reduced utility bills.

Strategies

1. Identify with Office and Administration (OA) and other state agencies the barriers to effective and timely implementation of efficiency improvements in state buildings. Recommend and advocate means to remove barriers.
2. Seek legislation to establish a low-interest loan fund to pay the incremental design and construction costs of energy-efficiency improvements in state buildings, or develop an alternative financing mechanism.
3. Examine the role and usefulness of energy-service companies in state buildings' energy-efficiency improvements. Identify barriers to use of energy-service companies.
4. Ally with the Division of State Parks to make parks facilities models of efficiency through the design of energy-efficient facilities, building retrofits and use of renewable energy sources. Examine placement of energy staff in DSP to accomplish technology transfer.
5. Identify with OA, DNR/DAS, DNR/DSP and other state agencies barriers to the purchase of energy-efficient equipment and supplies.
6. Identify with OA, DNR/DAS, DNR/DSP, Council on Efficient Operations and other state agencies energy-efficient and environmentally friendly products for state operations. Make these products priority choices for state purchasing through partnerships with state agencies. Examine potential of placing energy staff in OA to accomplish technology transfer.
7. Identify feasible opportunities to integrate the use of renewable-energy sources and new technologies, such as fuel cells and combined heat and power, in state buildings and facilitate this practice.

- **Outcome B. Understanding of energy-efficiency issues**

Measures: Results of citizen and business surveys, focus groups and interval panels.

Objective a. By 2003, increase public understanding of energy-efficient choices that affect the environment and economy by five percent.

Measure: Results of public and constituent groups surveys, focus groups and interval panels.

Strategies

1. Establish a baseline of understanding of energy issues through regular surveys of citizens and business, and establishment of focus groups or interval panels.
2. Distribute consistent and accurate information about varied aspects of energy supply and energy efficiency through multiple channels including news articles, news releases, publications, special events and other venues.
3. Promote Energy Star appliances as a means of focusing on the residential sector and increasing understanding of efficiency. Examine the use of rebates to encourage conversion to energy-efficient appliances.
4. In partnership with the Department of Elementary and Secondary Education and other state agencies and entities, develop and distribute educational materials to grades K-12.

- **Outcome C. Energy efficient businesses, agricultural operations and industries**

Measures: Number of buildings retrofitted with energy-efficient improvements or designed with energy-efficient techniques; processes improved with energy-efficient equipment.

Objective a. Increase energy efficiency in private-sector buildings and operations.

Measures: Trends in implementation of efficiency initiatives in business and industry buildings and operations; BTUs of energy saved; dollar value of reduced utility bills.

Strategies

1. Form partnerships with Industrial Assessment Center, Mid-America Manufacturing Technology Center (MAMTC), Missouri Chamber of Commerce and other organizations to accomplish these strategies.
2. Explore and develop financial incentives for businesses, agricultural operations and industries to encourage energy efficiency and use of technologies such as combined heat and power, use of waste energy sources, fuel cells and efficient motors.
3. Promote the Motor Challenge program and combined heat and power technology to assist and encourage industries and businesses to convert to these energy-savings approaches.
4. Add value to other state assistance programs by adding energy-efficiency and funding components. The state energy loan fund, economic development loan programs, agricultural business development program, and the treasurer's linked deposit program are examples of these programs.
5. Champion energy efficiency in new construction and retrofits by educating builders, architects, realtors, engineers and vocational-technical students.

- **Outcome D. Energy-efficient communities**

Measures: Number of communities that implement energy-efficient community plans and practices.

Objective a. Increase the amount of energy efficiency loans available to schools and local governments each year from \$10 million to \$15 million to save \$2 million in annual energy costs.

Measures: Dollar value of reductions in utility bills; BTUs of energy saved; anticipated savings in energy and utility bills in new schools designed with energy-efficient techniques.

Strategies

1. Establish partnerships with varied state, school and private sector organizations and entities to accomplish these strategies.
2. Explore and develop mechanisms to leverage existing DE loan funds for schools and local governments, such as bond issuance, linked deposit loans or private-sector financing.

3. Integrate renewable energy sources, combined heat and power, and distributed generation, where practicable, in schools and local government buildings.
4. Use the loan fund to leverage use of renewable energy sources and new technologies, such as fuel cells.
5. Increase individual contacts with school districts and local governments to advocate the benefits of energy efficiency and renewable energy.
6. Add value to other state programs by adding an energy component and funding for programs that serve local governments, such as state energy loan fund.

Objective b. By 2003, increase by 20 percent the implementation of projects that improve energy efficiency in Missouri's low-income housing.

Measures: Number of houses weatherized, utility dollars saved, amount of energy saved, number of people assisted.

Strategies

1. Advocate private/public partnerships to leverage available weatherization funds, including participation by utilities and property owners.
2. Maintain and strengthen partnerships with the Missouri Association for Community Action, Department of Social Services and local weatherization agencies to realize these strategies.
3. Integrate renewable-energy sources into weatherization projects, where practicable.
4. Seek additional state funding to help increase the projects and energy-cost savings for low-income citizens.
5. Seek additional federal funding to help increase the projects and energy-cost savings for low-income citizens.

Objective c. By 2005, increase the number of communities that implement energy efficient plans and practices by two percent.

Measures: Percentage of Missouri communities that implement energy-efficient plans and practices; percentage of communities that adopt minimum energy-efficiency codes; passage of city council resolutions indicating energy efficiency as a priority city policy; implementation of energy-efficient changes in city operation and neighborhood design.

Strategies

1. Partner with civic leaders and other urban interests to encourage sustainable community discussions.
2. Partner with the Department of Economic Development to initiate an energy component of the Community Betterment selection criteria.
3. Advocate voluntary adoption of building codes that include energy-efficiency components.
4. Engage in neighborhood revitalization efforts to demonstrate sustainable neighborhoods.